

WEST

☐ Generate Collection

L1: Entry 1 of 4

File: EPAB

Feb 8, 1996

PUB-NO: DE004427199A1

DOCUMENT-IDENTIFIER: DE 4427199 A1

TITLE: New 3,4-difluoro pyridine compounds useful in liquid crystal mixtures

PUBN-DATE: February 8, 1996

INVENTOR-INFORMATION:

NAME

COUNTRY

MANERO, JAVIER DR

DE

FUSS, ROBERT WALTER DR

DE

HORNING, BARBARA

DE

INT-CL (IPC): C07 D 213/62; C07 D 405/12; C07 D 405/14; C07 D 409/14; C07 D 417/14; C07 F 19/00; C07 F 7/08; C09 K 19/34 ; G02 F 1/13

EUR-CL (EPC): C07D213/61; C07D213/64, C07D405/12 , C09K019/34 , C07F007/08 , C09K019/40

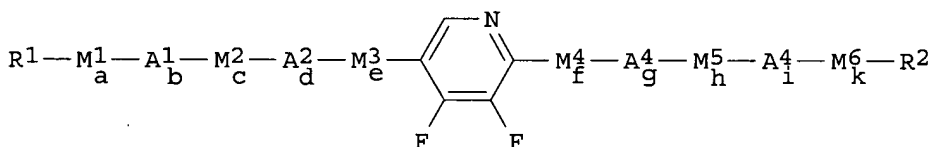
ABSTRACT:

New 3,4-difluoro pyridine derivatives of formula (I)

R<1>(-M<1>)a(A<1>)b(-M<2>)c(-A<2>)d(-M3)e-B(-M4)f(-A<4>)g-
(-M<5>)h(-A<4>)i(M<6>)k-R<2> (I). B= gp. (II); R<1>, R<2> = H, CN, F, Cl, -CF₃,
-CHF₂, -CH₂F, -OCF₃, -OCHF₂, -OCH₂F; or 1-20C alkyl with one or more CH₂ groups
replaced by -O-, -S-, -CO-, -CS-, -CH=CH-, -C≡C-, 1,2-cyclopropanylene, Si(CH₃)₂-,
1,4-phenylene, trans-1,4-cyclohexylene or 1,3-cyclopentylene, with the proviso that
oxygen and sulphur atoms are not bonded to one another, and/or where the hydrogen
atoms of the alkyl group can be replaced by one or more F, Cl, Br, OR<3>, -SCN, -OCN
or -N₃ groups; or can be one of the following groups e.g. (III)-(V) (optically active
or racemic), R<4>-CH(Cl)COO-, R<4> CH(F)-COO-, R<4>-CH(Cl)-CH₂-O-,
R<4>-CH(F)-CH₂-O-, R<4>-CH(N)COO-, R<4>-CH(CN)-CH₂-O-, R<4>-O-CH(CH₃)-COO-,
R<4>-O-CH(CH₃)-CH₂-O-, R<3>-R<7> = 1-16C alkyl with one or more asymmetric C atom,
with one or more CH₂ group opt. substd. by -O- and/or -CH=CH-, with the proviso that
oxygen atoms can not be bonded to one another; and/or one or more H atoms of the
alkyl group can be replaced by F or Cl, and R<4> and R<5> can together be -(CH₂)₄ or
-(CH₂)₅ and bonded into an oxirane, dioxolane, tetrahydrofuran, tetrahydropyran,
butyrolactone or valerolactone system; A<1>, A<2>, A<3>, A<4> = 1,4-phenylene,
pyrazine-2,5-diyl, pyridazine-3,6-diyl, pyridine-2,5-diyl, pyrimidine-2,5-diyl, all
opt. substd. with F, Cl and/or CN groups, trans-1,4-cyclohexylene opt. substd. with
CN and/or CH₃, (1,3,4)-thiadiazol-2,5-diyl, 1,3-dioxan-2,5-diyl,
1,3-dithione-2,5-diyl, 1,3-thiazole-2,4-diyl, opt. substd. with F, Cl and/or CN,
thiophene-2,4-diyl, opt. substd. with F, Cl and/or CN, thiophene-2,5-diyl opt.
substd. with F, Cl and/or CN piperazine-2,5-diyl, naphthalene-2,5-diyl opt. substd.
with F, Cl and/or CN, bicyclo(2,2,2)-octane-1,4-diyl opt. substd. with F, Cl and/or
CN, or 1,3-dioxaborinane-2,5-diyl, or the group B. Also claimed are: the use of
these compounds as components of liquid crystal mixtures; liquid crystal mixture
containing these compounds; and switching and/or display apparatus containing these
compounds as a liquid crystal medium.

AN 1996:239763 CAPLUS
 DN 124:274627
 TI 3,4-difluoropyridine and its mixture suitable for liquid crystal displays
 IN Manero, Javier; Fuss, Robert Walter; Hornung, Barbara
 PA Hoechst A.-G., Germany
 SO Ger. Offen., 44 pp.
 CODEN: GWXXBX
 DT Patent
 LA German
 IC ICM C07D213-62
 ICS C07D405-12; C07D405-14; C07D409-14; C07D417-14; C07F019-00;
 C07F007-08; C09K019-34; G02F001-13
 ICA C07D213-89; C07D213-64; C07D213-61; C07D213-80; C07D213-48; C07D405-14
 ICI C07D405-12, C07D307-12, C07D213-62; C07D247-00, C07D225-02
 CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other
 Reprographic Processes)
 Section cross-reference(s): 75
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 4427199	A1	19960208	DE 1994-4427199	19940801
OS	MARPAT 124:274627				
GI					



AB The title pyridine compd. is represented by I (R1, R2 = C1-20 alkyl residual; M1-6 = O, COO, OCO, single bond; A1-4 = 1,4-phenylene, pyrimidine-2,5-diyl, trans-1,4-cyclohexylene; a, b, c, d, e, f, g, h, i, k = 0, 1).

ST difluoro pyridine liq crystal display

IT Optical imaging devices
 (electrooptical liq.-crystal, 3,4-difluoropyridine and its mixt. suitable for liq. crystal displays)

IT Liquid crystals
 (nematic, twisted-nematic; 3,4-difluoropyridine and its mixt. suitable for liq. crystal displays)

IT	175533-42-3P	175533-44-5P	175533-45-6P	175533-46-7P	175533-47-8P
	175533-48-9P	175533-49-0P	175533-50-3P	175533-51-4P	175533-52-5P
	175533-53-6P	175533-54-7P	175533-55-8P	175533-56-9P	175533-57-0P
	175533-58-1P	175533-59-2P	175533-60-5P	175533-61-6P	175533-62-7P
	175533-63-8P	175533-64-9P	175533-65-0P	175533-66-1P	175533-67-2P
	175533-68-3P	175533-69-4P	175533-70-7P	175533-71-8P	175533-72-9P
	175533-73-0P	175533-74-1P	175533-75-2P	175533-76-3P	175533-77-4P
	175533-78-5P	175533-79-6P	175533-80-9P	175533-81-0P	175533-82-1P
	175533-83-2P	175533-84-3P	175533-85-4P	175533-86-5P	175533-87-6P
	175533-88-7P	175533-89-8P	175533-90-1P	175533-91-2P	175533-92-3P
	175533-93-4P	175533-94-5P	175533-95-6P	175533-96-7P	
	175533-97-8P	175533-98-9P	175533-99-0P	175534-00-6P	175534-01-7P
	175534-02-8P	175534-03-9P	175534-04-0P	175534-05-1P	175534-06-2P
	175534-07-3P	175534-08-4P	175534-09-5P	175534-10-8P	175534-11-9P
	175534-12-0P	175534-13-1P	175534-14-2P	175534-15-3P	175534-16-4P
	175534-17-5P	175534-18-6P	175534-19-7P	175534-20-0P	175534-21-1P
	175534-22-2P	175534-23-3P	175534-24-4P	175534-25-5P	175534-26-6P
	175534-27-7P	175534-28-8P	175534-29-9P	175534-30-2P	175534-31-3P
	175534-32-4P	175534-33-5P	175534-34-6P	175534-35-7P	175534-36-8P

175534-37-9P	175534-38-0P	175534-39-1P	175534-40-4P	175534-41-5P
175534-42-6P	175534-43-7P	175534-44-8P	175534-45-9P	175534-48-2P
175534-49-3P	175534-50-6P	175534-51-7P	175534-52-8P	175534-53-9P
175534-54-0P	175534-55-1P	175534-56-2P	175534-57-3P	175534-58-4P
175534-59-5P	175534-60-8P	175534-61-9P	175534-62-0P	175534-63-1P
175534-64-2P	175534-65-3P	175534-66-4P	175534-67-5P	175534-68-6P
175534-69-7P	175534-70-0P	175534-71-1P	175534-72-2P	175534-73-3P
175534-74-4P	175534-75-5P	175534-76-6P	175534-77-7P	175534-78-8P
175534-79-9P	175534-80-2P	175534-81-3P	175534-82-4P	175534-83-5P
175534-84-6P	175534-85-7P	175534-86-8P	175534-87-9P	175534-88-0P
175534-89-1P	175534-90-4P	175534-91-5P	175534-92-6P	175534-93-7P
175534-94-8P	175534-95-9P	175534-96-0P	175534-97-1P	175534-98-2P
175534-99-3P	175535-00-9P	175535-01-0P	175535-02-1P	175535-03-2P
175535-04-3P	175535-05-4P	175535-06-5P	175535-07-6P	175535-08-7P
175535-09-8P	175535-10-1P	175535-11-2P	175535-12-3P	175535-13-4P
175535-14-5P	175535-15-6P	175535-16-7P	175535-17-8P	175535-18-9P
175535-19-0P	175535-20-3P	175535-21-4P	175535-22-5P	175535-23-6P
175535-24-7P	175535-25-8P	175535-26-9P	175535-27-0P	175535-28-1P
175535-29-2P	175535-30-5P	175535-31-6P	175535-32-7P	175535-33-8P
175535-34-9P	175535-35-0P	175535-36-1P	175535-37-2P	175535-38-3P
175535-39-4P	175535-40-7P	175535-41-8P	175535-42-9P	175535-43-0P
175535-44-1P	175535-45-2P	175535-46-3P	175535-47-4P	175535-48-5P
175535-49-6P	175535-50-9P	175535-51-0P	175535-52-1P	175535-53-2P
175535-54-3P	175535-55-4P	175535-56-5P	175535-57-6P	175535-58-7P
175535-59-8P	175535-60-1P	175535-61-2P	175535-62-3P	175535-63-4P
175535-64-5P	175535-65-6P	175535-66-7P	175535-67-8P	175535-68-9P
175535-69-0P	175535-70-3P	175535-71-4P	175535-72-5P	175535-73-6P
175535-74-7P	175535-75-8P	175535-76-9P	175535-77-0P	175535-78-1P
175535-79-2P	175535-80-5P	175535-81-6P	175535-82-7P	175535-83-8P

RL: PNU (Preparation, unclassified); PREP (Preparation)
(prepn. of 3,4-difluoropyridine)

IT 175535-84-9P	175535-85-0P	175535-86-1P	175535-87-2P	175535-88-3P
175535-89-4P	175535-90-7P	175535-91-8P	175535-92-9P	175535-93-0P
175535-94-1P	175535-95-2P	175535-96-3P	175535-97-4P	175535-98-5P
175535-99-6P	175536-00-2P	175536-01-3P	175536-02-4P	175536-03-5P
175536-04-6P	175536-05-7P	175536-06-8P	175536-07-9P	175536-08-0P
175536-09-1P	175536-10-4P	175536-11-5P	175536-12-6P	175536-13-7P
175536-14-8P	175536-15-9P	175536-16-0P	175536-17-1P	175536-18-2P
175536-19-3P	175536-20-6P	175536-21-7P	175536-22-8P	175536-23-9P
175536-24-0P	175536-25-1P	175536-26-2P	175536-27-3P	175536-28-4P
175536-29-5P	175536-30-8P	175536-31-9P	175536-32-0P	175536-33-1P
175536-34-2P	175536-35-3P	175536-36-4P	175536-37-5P	175536-38-6P
175536-39-7P	175536-40-0P	175536-41-1P	175536-42-2P	175536-43-3P
175536-44-4P	175536-45-5P	175536-46-6P	175536-47-7P	175536-48-8P
175536-49-9P	175536-50-2P	175536-51-3P	175536-52-4P	175536-53-5P
175536-54-6P	175536-55-7P	175536-56-8P	175536-57-9P	175536-58-0P
175536-59-1P	175536-60-4P	175536-61-5P	175536-62-6P	175536-63-7P
175536-64-8P	175536-65-9P	175536-66-0P	175536-67-1P	175536-68-2P
175536-69-3P	175536-70-6P	175536-71-7P	175536-72-8P	175536-73-9P
175536-74-0P	175536-75-1P	175536-76-2P	175536-77-3P	175536-78-4P
175536-79-5P	175536-80-8P	175536-81-9P	175536-82-0P	175536-83-1P
175536-84-2P	175536-85-3P	175536-86-4P	175536-87-5P	175536-88-6P
175536-89-7P	175536-90-0P	175536-91-1P	175536-92-2P	175536-93-3P
175536-94-4P	175536-95-5P	175536-96-6P	175536-97-7P	
175536-98-8P	175536-99-9P	175537-00-5P	175537-01-6P	
175537-02-7P	175537-03-8P	175537-04-9P	175537-05-0P	175537-06-1P
175537-07-2P	175537-08-3P	175537-09-4P	175537-10-7P	175537-11-8P
175537-12-9P	175537-13-0P	175537-14-1P	175537-15-2P	175537-16-3P
175537-17-4P	175537-18-5P	175537-19-6P	175537-20-9P	175537-21-0P
175537-22-1P	175537-23-2P	175537-24-3P	175537-25-4P	175537-26-5P
175537-27-6P	175537-28-7P	175537-29-8P	175537-30-1P	175537-31-2P
175537-32-3P	175537-33-4P	175537-34-5P	175537-35-6P	175537-36-7P
175537-37-8P	175537-38-9P	175537-39-0P	175537-40-3P	175537-41-4P
175537-42-5P	175537-43-6P	175537-44-7P	175537-45-8P	175537-46-9P

175537-47-0P 175537-48-1P 175537-49-2P 175537-50-5P 175537-51-6P
 175537-52-7P 175537-53-8P 175537-54-9P 175537-55-0P 175537-56-1P
 175537-57-2P 175537-58-3P 175537-59-4P 175537-60-7P 175537-61-8P
 175537-62-9P 175537-63-0P 175537-64-1P 175537-65-2P 175537-66-3P
 175537-67-4P 175537-68-5P 175537-69-6P 175537-70-9P 175537-71-0P
 175537-72-1P 175537-73-2P 175537-74-3P 175537-75-4P 175537-76-5P
 175537-77-6P 175537-78-7P 175537-79-8P 175537-80-1P 175537-81-2P
 175537-82-3P 175537-83-4P 175537-84-5P 175537-85-6P 175537-86-7P
 175537-87-8P 175537-88-9P 175537-89-0P 175537-90-3P 175537-91-4P
 175537-92-5P 175537-93-6P 175537-94-7P 175537-95-8P 175537-96-9P
 175537-97-0P 175537-98-1P 175537-99-2P 175538-00-8P 175538-01-9P
 175538-02-0P 175538-03-1P 175538-04-2P 175538-05-3P 175538-06-4P
 175538-07-5P 175538-08-6P 175538-09-7P 175538-10-0P 175538-11-1P
 175538-12-2P 175538-13-3P 175538-14-4P 175538-15-5P 175538-16-6P
 175538-17-7P 175538-18-8P 175538-19-9P 175538-20-2P 175538-21-3P
 175538-22-4P

RL: PNU (Preparation, unclassified); PREP (Preparation)
 (prepn. of 3,4-difluoropyridine)

IT 175538-23-5P 175538-24-6P 175538-25-7P 175538-26-8P 175538-27-9P
 175538-28-0P 175538-29-1P 175538-30-4P 175538-31-5P 175538-32-6P
 175538-33-7P 175538-34-8P 175538-35-9P 175538-36-0P 175538-37-1P
 175538-38-2P 175538-39-3P 175538-40-6P 175538-41-7P 175538-42-8P
 175538-43-9P 175538-44-0P 175538-45-1P 175538-46-2P 175538-47-3P
 175538-48-4P 175538-49-5P 175538-50-8P 175538-51-9P 175538-52-0P
 175538-57-5P 175538-60-0P 175538-61-1P 175538-62-2P 175538-63-3P
 175538-64-4P 175538-65-5P 175538-66-6P

RL: PNU (Preparation, unclassified); PREP (Preparation)
 (prepn. of 3,4-difluoropyridine)

IT 15862-34-7P, 2-Hydroxy-3-nitro-5-bromopyridine 15862-37-0P 90902-84-4P
 121219-08-7P 127481-94-1P 143651-26-7P 148455-06-5P 156772-60-0P
 175533-38-7P 175533-39-8P 175533-40-1P 175533-41-2P 175533-43-4P
 175534-46-0P 175534-47-1P 175538-53-1P 175538-54-2P 175538-55-3P
 175538-56-4P 175538-58-6P 175538-59-7P

RL: PNU (Preparation, unclassified); RCT (Reactant); PREP (Preparation);
 RACT (Reactant or reagent)

(prepn. of 3,4-difluoropyridine)

IT 1072-97-5, 2-Amino-5-bromopyridine 7697-37-2, Nitric acid, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)

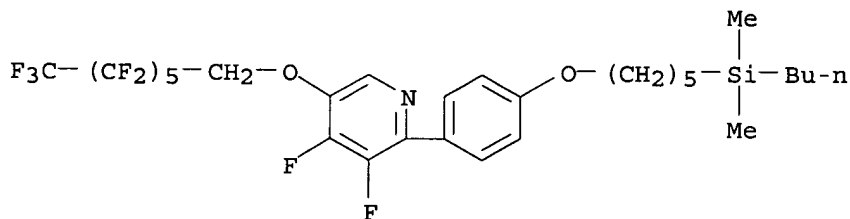
(prepn. of 3,4-difluoropyridine)

IT 175533-93-4P 175533-94-5P 175536-98-8P
 175536-99-9P

RL: PNU (Preparation, unclassified); PREP (Preparation)
 (prepn. of 3,4-difluoropyridine)

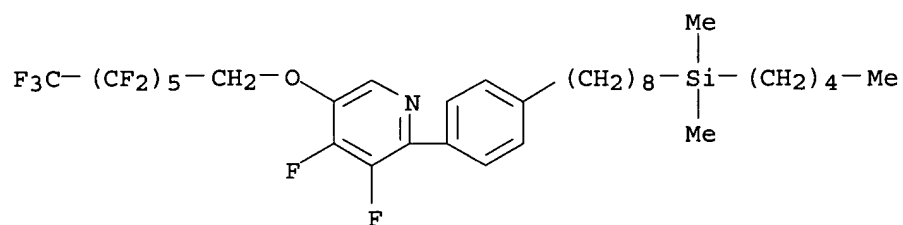
RN 175533-93-4 CAPLUS

CN Pyridine, 2-[4-[[5-(butyldimethylsilyl)pentyl]oxy]phenyl]-3,4-difluoro-5-
 [(2,2,3,3,4,4,5,5,6,6,7,7,7-tridecafluoroheptyl)oxy]- (9CI) (CA INDEX
 NAME)

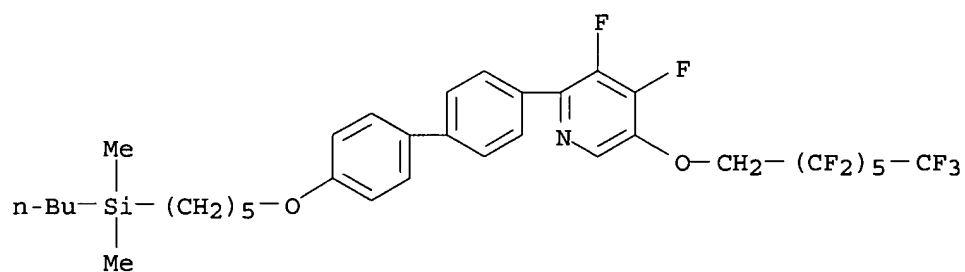


RN 175533-94-5 CAPLUS

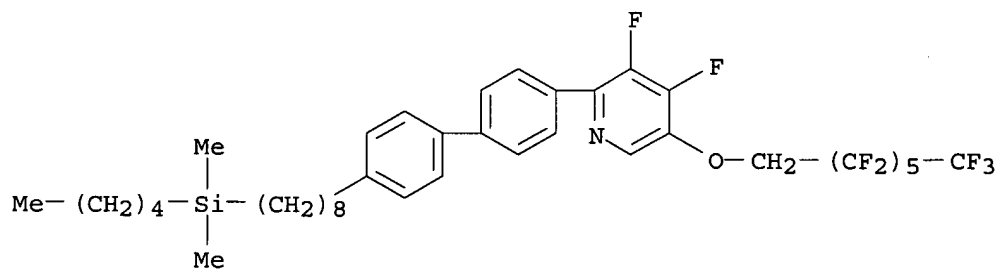
CN Pyridine, 2-[4-[8-(dimethylpentylsilyl)octyl]phenyl]-3,4-difluoro-5-
 [(2,2,3,3,4,4,5,5,6,6,7,7,7-tridecafluoroheptyl)oxy]- (9CI) (CA INDEX
 NAME)



RN 175536-98-8 CAPLUS
 CN Pyridine, 2-[4'-[[5-(butyldimethylsilyl)pentyl]oxy][1,1'-biphenyl]-4-yl]-3,4-difluoro-5-[(2,2,3,3,4,4,5,5,6,6,7,7,7-tridecafluoroheptyl)oxy] - (9CI)
 (CA INDEX NAME)



RN 175536-99-9 CAPLUS
 CN Pyridine, 2-[4'-[8-(dimethylpentylsilyl)octyl][1,1'-biphenyl]-4-yl]-3,4-difluoro-5-[(2,2,3,3,4,4,5,5,6,6,7,7,7-tridecafluoroheptyl)oxy] - (9CI)
 (CA INDEX NAME)



WEST

Generate Collection

L1: Entry 2 of 4

File: EPAB

Jun 29, 1995

PUB-NO: WO009517481A1

DOCUMENT-IDENTIFIER: WO 9517481 A1

TITLE: CHIRAL LIQUID CRYSTAL COMPOUNDS HAVING A PERFLUOROETHER TERMINAL PORTION

PUBN-DATE: June 29, 1995

INVENTOR-INFORMATION:

NAME

COUNTRY

JANULIS, EUGENE P

JOHNSON, GILBERT C

RADCLIFFE, MARC D

SAVU, PATRICIA M

SNUSTAD, DANIEL C

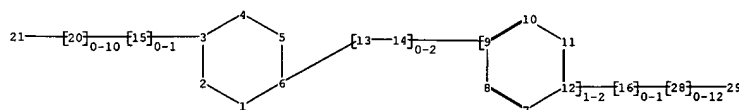
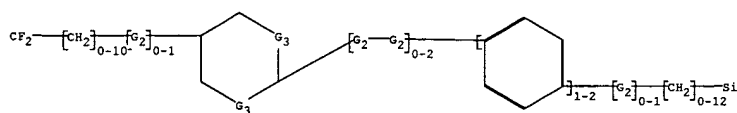
SPAWN, TERENCE D

INT-CL (IPC): C09 K 19/04; C09 K 19/12; C09 K 19/20; C09 K 19/34; C09 K 19/32; C09 K 19/44; C07 C 69/76; C07 C 43/225; C07 D 239/26

EUR-CL (EPC): C09K019/04; C09K019/20, C09K019/34 , C07C043/225 , C07C069/017 , C07C069/92 , C07D239/34 , C07D405/12 , C09K019/12 , C09K019/32

ABSTRACT:

CHG DATE=19990617 STATUS=O>Fluorine-containing, chiral liquid crystal compounds comprise: a) an aliphatic fluorocarbon terminal portion containing at least two catenary ether oxygen atoms; b) a chiral, aliphatic hydrocarbon terminal portion; and c) a central core connecting the terminal portions. The compounds have smectic mesophases or latent smectic mesophases and are useful, for example, in liquid crystal display devices.



chain nodes :

13 14 15 16 20 21 28 29

ring nodes :

1 2 3 4 5 6 7 8 9 10 11 12

chain bonds :

3-15 6-13 9-14 12-16 13-14 15-20 16-28 20-21 28-29

ring bonds :

1-2 1-6 2-3 3-4 4-5 5-6 7-8 7-12 8-9 9-10 10-11 11-12

exact/norm bonds :

1-2 1-6 2-3 3-4 3-15 4-5 5-6 6-13 9-14 12-16 13-14 15-20 16-28 20-21 28-29

normalized bonds :

7-8 7-12 8-9 9-10 10-11 11-12

G1:CH₃,Et,n-Pr,CF₃

G2:C,O

G3:C,O,N

Match level :

1:Atom 2:Atom 3:Atom 4:Atom 5:Atom 6:Atom 7:Atom 8:Atom 9:Atom 10:Atom 11:Atom
12:Atom 13:CLASS 14:CLASS 15:CLASS 16:CLASS 20:CLASS 21:CLASS 28:CLASS 29:CLASS

AN 2002:172022 CAPLUS
DN 136:224305
TI Partially fluorinated liquid crystal material
IN Wand, Michael; Gough, Neil; Chen, Xin Hua
PA Displaytech, Inc., USA
SO PCT Int. Appl., 91 pp.
CODEN: PIXXD2

DT Patent

LA English

IC ICM C09K019-34

ICS C09K019-20; C09K019-12; C07C069-76

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 75

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002018514	A1	20020307	WO 2001-US27182	20010831
W:	AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MN, MW, MX, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
RW:	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			
AU 2001085364	A5	20020313	AU 2001-85364	20010831
US 2000-229892P	P	20000901		
US 2001-854181	A	20010511		
WO 2001-US27182	W	20010831		

OS MARPAT 136:224305

AB The invention provides LC compns. that exhibit V-shaped switching when aligned in an analog device configuration and exhibit bistable switching when aligned in a bookshelf-type device configuration. The invention more specifically provides LC compns. of (R = fluorinated alkyl, ether; A, B, C = 5-6 arom. rings each substituted with 1-4 fluorines and CH can be substituted with N, O, S; d = 0, 1; D = COO, OOC, CH₂CH₂, double bond, triple bond; Y = C1-6 alkyl, fluorinated alkyl; R1 = nonchiral tail alkyl with CH₂ group replaced by O, S, etc.) which exhibit bistable switching as well as V-shaped switching when aligned in appropriate device configurations. The invention also provides methods of using the compds. of the invention in making LC compns. and electrooptical devices comprising an aligned layer of the compns. of this invention.

ST fluorinated liq crystal compn display

IT Liquid crystal displays

(partially fluorinated liq. crystal material for)

IT Liquid crystals

(partially fluorinated liq. crystal material for liq. crystal display)

IT 119557-43-6 402860-24-6 402860-25-7 402860-26-8 402860-27-9

402860-28-0 402860-29-1 402860-30-4 402860-31-5 402860-32-6

402860-33-7 402860-34-8 402860-35-9 402860-36-0

402860-37-1

RL: DEV (Device component use); USES (Uses)

(partially fluorinated liq. crystal material for liq. crystal display)

IT 402860-38-2

RL: DEV (Device component use); PRP (Properties); USES (Uses)

(partially fluorinated liq. crystal material for liq. crystal display)

IT 347192-53-4P 402860-12-2P 402860-23-5P

RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(partially fluorinated liq. crystal material for liq. crystal display)

IT 402860-22-4P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT

(Reactant or reagent)
 (partially fluorinated liq. crystal material for liq. crystal display)

IT 402860-19-9P
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (prepn. of partially fluorinated liq. crystal material for liq. crystal display)

IT 98-59-9, Tosyl chloride 100-39-0, Benzyl bromide 104-15-4, reactions 110-53-2, 1-Bromopentane 110-87-2 120-47-8, Ethyl 4-hydroxybenzoate 423-39-2 821-41-0, 5-Hexen-1-ol 1438-82-0, 1,1,1,3,3-Pentamethyldisiloxane 5419-55-6 5798-75-4, Ethyl 4-bromobenzoate 6418-38-8, 2,3-Difluorophenol 7103-09-5 15448-47-2, reactions 16853-85-3 33036-62-3, 4-Bromobutan-1-ol 121170-45-4, [R]-1-Trifluoromethyl heptanol
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (prepn. of partially fluorinated liq. crystal material for liq. crystal display)

IT 1486-51-7P, 4-Benzyloxybenzoic acid 31608-22-7P 56441-55-5P, Ethyl 4-benzyloxybenzoate 116486-78-3P 121170-46-5P 121170-47-6P 144178-30-3P 162082-63-5P 181042-39-7P 228570-09-0P 402860-04-2P 402860-05-3P 402860-06-4P 402860-07-5P 402860-08-6P 402860-09-7P 402860-10-0P 402860-11-1P 402860-13-3P 402860-14-4P 402860-15-5P 402860-16-6P 402860-17-7P 402860-18-8P 402860-20-2P 402860-21-3P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (prepn. of partially fluorinated liq. crystal material for liq. crystal display)

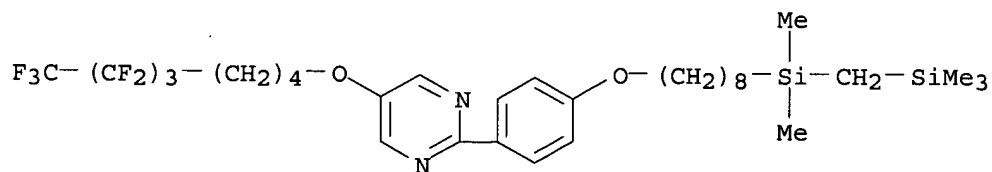
RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE
 (1) Drzewinski; CAPLUS 1198:624787
 (2) Okabe; JP 882778 1996
 (3) Suzuki; US 5110497 A 1992 CAPLUS

IT 402860-34-8
 RL: DEV (Device component use); USES (Uses)
 (partially fluorinated liq. crystal material for liq. crystal display)

RN 402860-34-8 CAPLUS

CN Pyrimidine, 2-[4-[[8-[dimethyl[(trimethylsilyl)methyl]silyl]octyl]oxy]phenyl]-5-[(5,5,6,6,7,7,8,8,8-nonafluorooctyl)oxy]- (9CI) (CA INDEX NAME)



AN 2002:716753 CAPLUS
 DN 137:255487
 TI Alkyl silane liquid crystal compounds
 IN Wand, Michael; Gough, Neil; More, Kundalika; Thurmes, William N.; Chen, Xin-Hua
 PA USA
 SO U.S. Pat. Appl. Publ., 51 pp.
 CODEN: USXXCO
 DT Patent
 LA English
 IC ICM C09K019-34
 ICS C09K019-20; C07F007-02; C07F007-21
 NCL 252299610
 CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
 Section cross-reference(s): 75
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2002130299	A1	20020919	US 2001-754033	20010103
PRAI	US 2000-256063P	P	20001215		
AB	The present invention relates to compds. useful as components of LC and FLC compns. which in turn are useful in the manuf. of optical devices. Compds. of this invention have a silane tail, which can contain more than one Si. Compds. of this invention can include those with disilane tails. The invention provides LC compns. contg. one or more of the silanes of this invention. Addn. of one or more of the compds. of this invention to LC compns. can result in significant improvement in optical or LC properties. In particular, the compds. of this invention can significantly lower the m.p., f.p. or both of an LC compn. resulting in significant improvement in device stability.				
ST	liq crystal optical device display				
IT	Liquid crystal displays (alkyl silane liq. crystal compds. for)				
IT	Liquid crystals (ferroelec.; prepn. of alkyl silane liq. crystal compds. for liq crystal display)				
IT	Ferroelectric materials (liq.-crystal; prepn. of alkyl silane liq. crystal compds. for liq crystal display)				
IT	Liquid crystals (nematic; prepn. of alkyl silane liq. crystal compds. for liq crystal display)				
IT	Liquid crystals (smectic A; alkyl silane liq. crystal compds.)				
IT	Liquid crystals (smectic C; prepn. of alkyl silane liq. crystal compds. for liq crystal display)				
IT	402860-34-8P	460359-01-7P	460359-02-8P	460359-03-9P	
	460359-04-0P	460359-05-1P	460359-06-2P		
	RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses) (alkyl silane liq. crystal compds. for liq crystal display)				
IT	57202-41-2	57202-54-7	57202-58-1	121083-93-0	121218-85-7
	121218-90-4	126163-69-7	155468-60-3	155468-61-4	308107-81-5
	460359-38-0	460359-40-4	460359-41-5	460359-42-6	460359-44-8
	460359-45-9	460359-46-0	460359-52-8	460359-53-9	
	460359-56-2				
	RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses) (alkyl silane liq. crystal compds. for liq crystal display)				
IT	460359-18-6P	460359-20-0P	460359-21-1P	460359-22-2P	460359-24-4P
	460359-26-6P	460359-28-8P	460359-31-3P	460359-32-4P	
	460359-33-5P	460359-34-6P	460359-35-7P	460359-36-8P	460359-37-9P

460359-96-0P

RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(alkyl silane liq. crystal compds. for liq crystal display)

IT 57202-48-9 120091-49-8 460359-39-1 460359-43-7 460359-47-1
460359-54-0 460359-55-1

RL: TEM (Technical or engineered material use); USES (Uses)

(alkyl silane liq. crystal compds. for liq crystal display)

IT 1066-35-9, Chlorodimethylsilane 1066-54-2, (Trimethylsilyl)acetylene
2344-80-1, Chloromethyltrimethylsilane 2695-48-9, 8-Bromo-1-octene
13170-43-9, (Trimethylsilyl)methylmagnesium chloride 17196-12-2
30102-73-9 58415-63-7, 4-(5-Octylpyrimidin-2-yl)-phenol 68535-55-7,
2-(4-Hydroxyphenyl)pyrimidine 110203-06-0, 4-(5-Decyloxy-pyrimidin-2-yl)-
phenol 124410-14-6 149396-77-0, 6-(4-Octyl-phenyl)-pyridin-3-ol
179817-73-3 460359-00-6 460359-19-7 460359-23-3 460359-25-5
460359-27-7 460359-29-9 460359-30-2

RL: RCT (Reactant); RACT (Reactant or reagent)

(prepn. of alkyl silane liq. crystal compds. for liq crystal display)

IT 1189-75-9P 28681-61-0P 460359-07-3P 460359-08-4P 460359-09-5P
460359-10-8P 460359-11-9P 460359-12-0P 460359-13-1P 460359-14-2P
460359-15-3P 460359-16-4P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(prepn. of alkyl silane liq. crystal compds. for liq crystal display)

IT 460359-17-5P

RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(prepn. of alkyl silane liq. crystal compds. for liq crystal display)

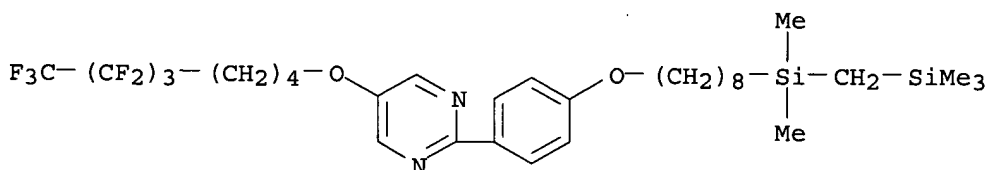
IT 402860-34-8P

RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(alkyl silane liq. crystal compds. for liq crystal display)

RN 402860-34-8 CAPLUS

CN Pyrimidine, 2-[4-[[8-[dimethyl[(trimethylsilyl)methyl]silyl]octyl]oxy]phenyl]-5-[(5,5,6,6,7,7,8,8,8-nonafluorooctyl)oxy]- (9CI) (CA INDEX NAME)



IT 460359-52-8

RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)

(alkyl silane liq. crystal compds. for liq crystal display)

RN 460359-52-8 CAPLUS

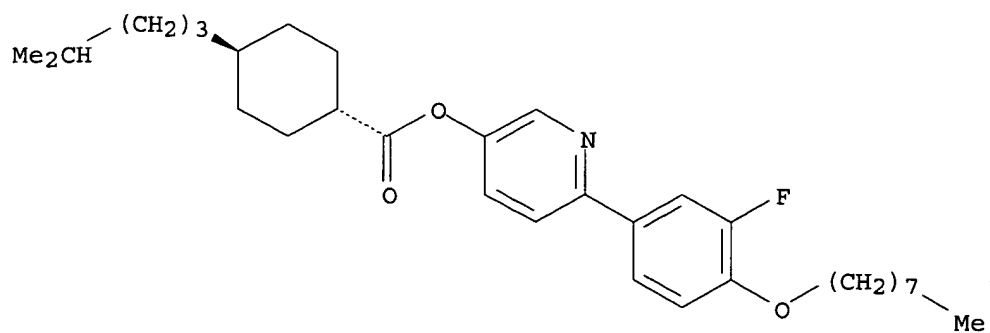
CN INDEX NAME NOT YET ASSIGNED

CM 1

CRN 460359-51-7

CMF C32 H46 F N O3

Relative stereochemistry.

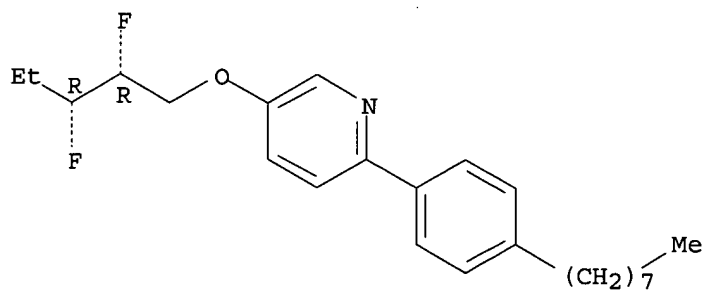


CM 2

CRN 460359-50-6

CMF C24 H33 F2 N O

Absolute stereochemistry.

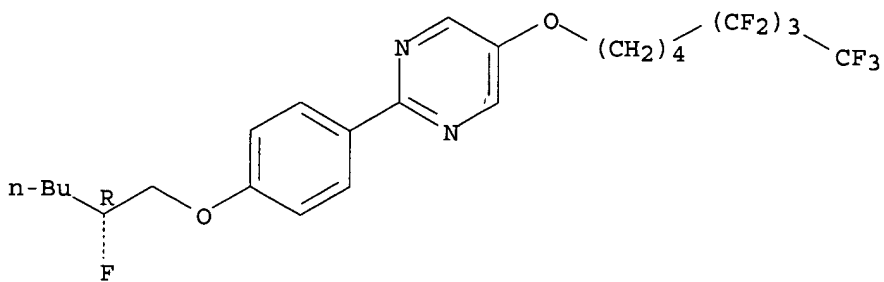


CM 3

CRN 460359-49-3

CMF C24 H26 F10 N2 O2

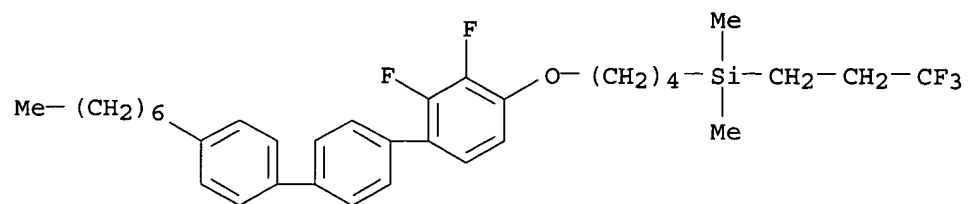
Absolute stereochemistry.



CM 4

CRN 460359-48-2

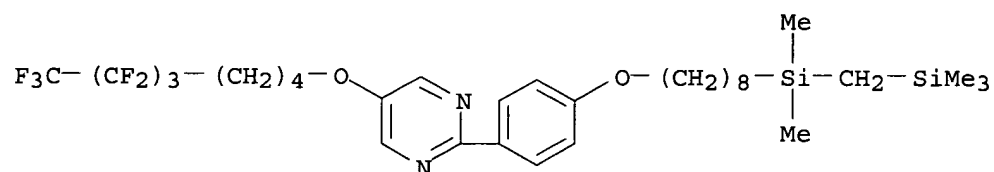
CMF C34 H43 F5 O Si



CM 5

CRN 402860-34-8

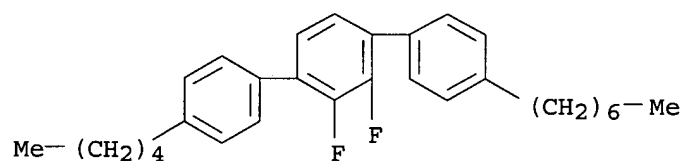
CMF C32 H47 F9 N2 O2 Si2



CM 6

CRN 121235-87-8

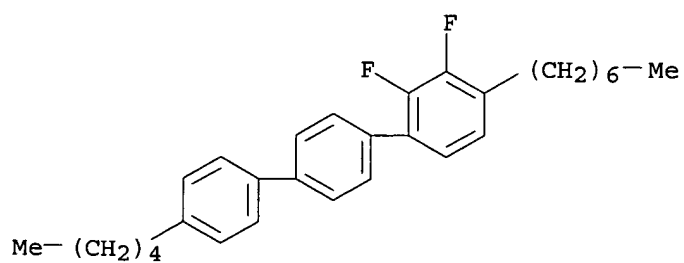
CMF C30 H36 F2



CM 7

CRN 121218-90-4

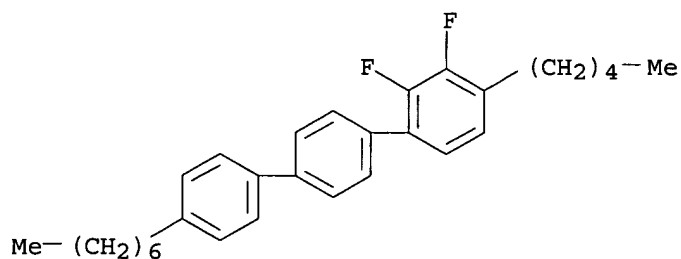
CMF C30 H36 F2



CM 8

CRN 121218-85-7

CMF C30 H36 F2

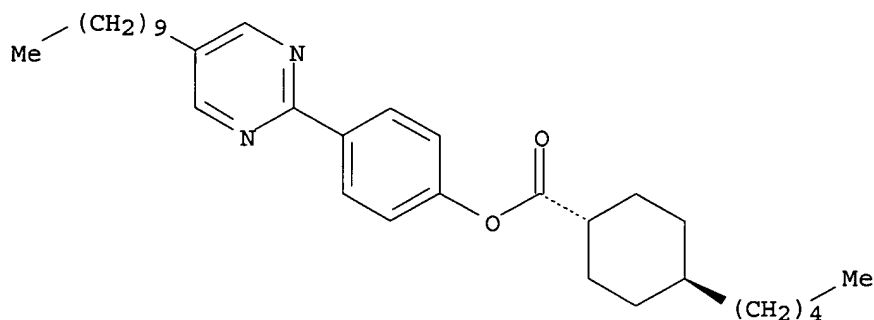


CM 9

CRN 121083-93-0

CMF C32 H48 N2 O2

Relative stereochemistry.



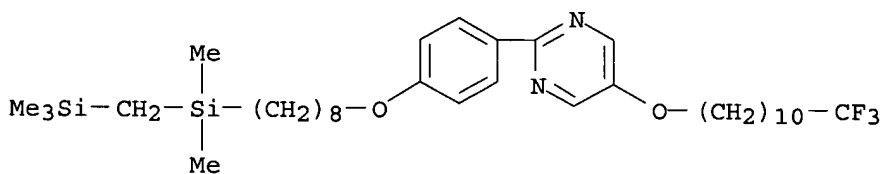
IT 460359-26-6P 460359-28-8P

RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(alkyl silane liq. crystal compds. for liq crystal display)

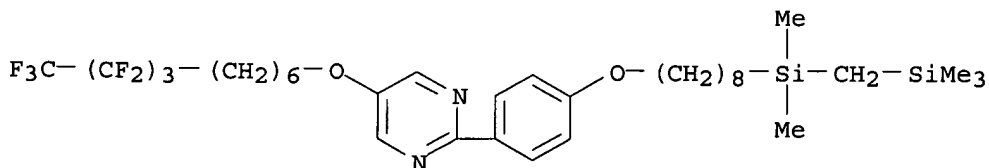
RN 460359-26-6 CAPLUS

CN Pyrimidine, 2-[4-[[8-[dimethyl[(trimethylsilyl)methyl]silyl]octyl]oxy]phenyl]-5-[(11,11,11-trifluoroundecyl)oxy] - (9CI) (CA INDEX NAME)



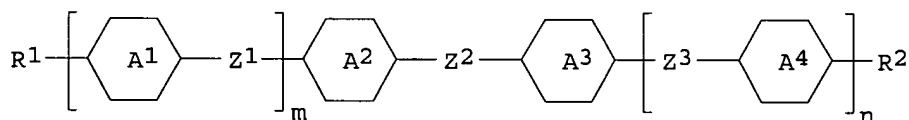
RN 460359-28-8 CAPLUS

CN Pyrimidine, 2-[4-[[8-[dimethyl[(trimethylsilyl)methyl]silyl]octyl]oxy]phenyl]-5-[(7,7,8,8,9,9,10,10,10-nonafluorodecyl)oxy] - (9CI) (CA INDEX NAME)



AN 2001:885419 CAPLUS
 DN 136:29260
 TI Liquid crystal compositions and liquid crystal display device comprising liquid crystalline compounds having silane diyl group
 IN Sagou, Kouki; Takeuchi, Hiroyuki; Matsui, Shuichi; Tomoyuki, Kondo; Yasuhiro, Kubo; Nakagawa, Etsuo
 PA Chisso Corporation, Japan; Chisso Petrochemical Corp.
 SO Eur. Pat. Appl., 96 pp.
 CODEN: EPXXDW
 DT Patent
 LA English
 IC ICM C07F007-08
 ICS C09K019-40
 CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
 Section cross-reference(s): 75
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1160251	A2	20011205	EP 2001-250197	20010531
	EP 1160251	A3	20011212		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	JP 2001342195	A2	20011211	JP 2000-164601	20000601
	US 2002047103	A1	20020425	US 2001-867624	20010531
PRAI	JP 2000-164601	A	20000601		
OS	MARPAT 136:29260				
GI					



I

AB Disclosed are liq. cryst. compds. which have large dielec. anisotropy, high elec. insulation properties (high specific resistance or high voltage holding ratio), small temp. dependence, broad liq. crystal phase temp. range, excellent compatibility and low viscosity and which are represented by the formula I (A1, A2, A3, A4 = 1,4-cyclohexylene, cyclohexene-1,4-diyl, 1,4-phenylene, pyridine-2,5-diyl, pyrimidine-2,5-diyl, 1,3-dioxane-2,5-diyl, tetrahydropyran-2,5-diyl or bicycle[1,1,1]pentane-1,3-diyl; R1 = C1-20-alkyl in which any methylene may be replaced by -O-, -S-, -CO-, -CS-, -CH=CH-, -C.tplbond.C-, cyclopropane-1,2-diyl, cyclobutane-1,3-diyl or bicyclo[1,1,1]pentane-1,3-diyl, but -O- and -S- are not successive, and one or more hydrogen in R1 may be replaced by halogen or cyano; R2 = halogen, cyano, C1-10-alkyl in which at least one hydrogen is replaced by halogen and any methylene may be replaced by -O-, -S-, -CO-, -CS-, -CH=CH-, -C-C-, -CH=CF- or -CF=CF-, but -O- and -S- are not successive; Z1, Z2, Z3 = single bond, -SiH2CH2-, -CH2SiH2-, C1-4-alkylene in which one or more hydrogen may be replaced by halogen and any methylene may be replaced by -O-, -S-, -CO-, -CS-, -CH=CH- or -C.tplbond.C-, but -O- and -S- are not successive; m, n = 0, 1). Further disclosed are liq. crystal compns. comprising at least one liq. cryst. compd. of the above formula and liq. crystal display devices composed of the compns., which can exhibit low threshold voltage, high elec. insulation properties and low viscosity.

ST liq. cryst. compd. compn. display silane diyl group prepn
 IT Liquid crystal displays

Liquid crystals

(liq. crystal compns. and liq. crystal display device comprising liq. cryst. compds. having silane diyl group)

IT	461-96-1,	3,5-Difluorobromobenzene	71458-06-5,	trans-4-Propylcyclohexylmethanol	82562-85-4	88416-94-8	105529-58-6,
		3-Fluoro-4-trifluoromethoxybromobenzene	105931-73-5,	3-Fluoro-4-iodobromobenzene	138526-69-9,	3,4,5-Trifluorobromobenzene	143418-49-9,
		3,4,5-Trifluorophenylboronic acid					
	RL: RCT (Reactant); RACT (Reactant or reagent)						
	(in prepn. of liq. cryst. compds. having silane diyl group)						
IT	135807-96-4P	187804-77-9P	321308-90-1P	377736-14-6P	377736-15-7P	377736-16-8P	377736-17-9P
							377736-18-0P
							377736-19-1P
	RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)						
	(in prepn. of liq. cryst. compds. having silane diyl group)						
IT	377736-20-4P	377736-21-5P					
	RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)						
	(liq. crystal compns. and liq. crystal display device comprising liq. cryst. compds. having silane diyl group)						
IT	377736-22-6P	377736-23-7P					
	RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)						
	(liq. crystal compns. and liq. crystal display device comprising liq. cryst. compds. having silane diyl group)						
IT	7465-91-0	22692-80-4	38444-13-2	38690-77-6	40817-08-1	51518-75-3	
	56131-48-7	56131-49-8	57202-28-5	57202-29-6	57202-30-9		
	58743-75-2	59855-05-9	61203-99-4	61204-01-1	61204-03-3		
	63221-88-5	64835-59-2	67589-39-3	67589-41-7	67589-47-3		
	67589-52-0	67589-53-1	67589-72-4	70567-18-9	70602-95-8		
	72928-54-2	76802-59-0	76802-61-4	79319-27-0	79912-85-9		
	79945-42-9	80944-44-1	80955-71-1	81701-13-5	81711-13-9		
	81793-57-9	81793-59-1	81936-32-5	82406-82-4	82406-83-5		
	82492-42-0	82832-27-7	82832-32-4	82832-33-5	82832-57-3		
	82832-58-4	82985-80-6	83242-83-5	84655-98-1	84656-75-7		
	84656-77-9	84656-92-8	85312-59-0	85312-60-3	86579-52-4		
	86776-51-4	86776-52-5	86778-48-5	86786-89-2	87073-93-6		
	87260-24-0	88038-92-0	88416-69-7	88416-84-6	88639-41-2		
	88878-50-6	89129-90-8	89409-90-5	92263-41-7	95495-03-7		
	95495-15-1	95495-17-3	95495-18-4	95906-29-9	95906-34-6		
	96184-40-6	96184-42-8	96624-41-8	96624-43-0	96624-52-1		
	97398-80-6	98321-58-5	98495-10-4	98495-11-5	98495-16-0		
	98495-17-1	100980-86-7	101478-47-1	101559-74-4	102714-92-1		
	102714-93-2	102714-95-4	105351-42-6	106021-42-5	107215-66-7		
	107215-73-6	107215-74-7	107392-35-8	110881-30-6	112026-68-3		
	114291-10-0	116090-24-5	116090-25-6	116090-26-7	116090-30-3		
	116090-32-5	116090-33-6	116090-34-7	116090-36-9	116090-37-0		
	117923-19-0	117923-21-4	117943-37-0	118164-50-4	118164-51-5		
	120893-64-3	121219-85-0	123560-48-5	123787-66-6	123787-68-8		
	124728-81-0	124729-02-8	129738-34-7	129738-42-7	131819-23-3		
	131819-24-4	132123-39-8	132123-43-4	132123-45-6	132123-46-7		
	133914-49-5	133914-50-8	133937-72-1	134412-17-2	134412-18-3		
	135734-59-7	135734-60-0	137019-95-5	137529-40-9	137529-41-0		
	137529-42-1	137529-43-2	137529-56-7	137529-63-6	137784-79-3		
	139136-72-4	139215-80-8	139420-31-8	142400-92-8	145131-04-0		
	145305-20-0	145918-41-8	146781-31-9	148462-51-5	148462-52-6		
	153227-45-3	153227-50-0	153227-53-3	153429-48-2	155041-85-3		
	155905-85-4	171362-74-6	173306-39-3	173476-21-6	173476-46-5		
	174350-05-1	174350-07-3	174350-08-4	175859-23-1	175859-24-2		
	175859-25-3	175859-28-6	175859-31-1	178689-87-7	180337-85-3		
	181369-18-6	181943-58-8	183145-19-9	183388-45-6	184161-94-2		
	186320-72-9	196699-20-4	196699-38-4	196870-32-3	197012-68-3		
	197012-69-4	197247-35-1	205806-87-7	207462-53-1	208338-62-9		
	208338-64-1	213591-60-7	213591-64-1	261728-96-5	264615-90-9		

268550-24-9 268550-43-2 303186-20-1 377736-24-8 377736-26-0
 377736-27-1 377736-28-2 377736-29-3 377736-30-6 377736-31-7
 377736-32-8 377736-33-9 377736-34-0 377736-36-2 **377736-37-3**
 377736-38-4 377736-39-5 377736-40-8 377736-41-9 377736-42-0
 377736-43-1 377746-76-4

RL: TEM (Technical or engineered material use); USES (Uses)
 (liq. crystal compns. and liq. crystal display device comprising liq.
 cryst. compds. having silane diyl group)

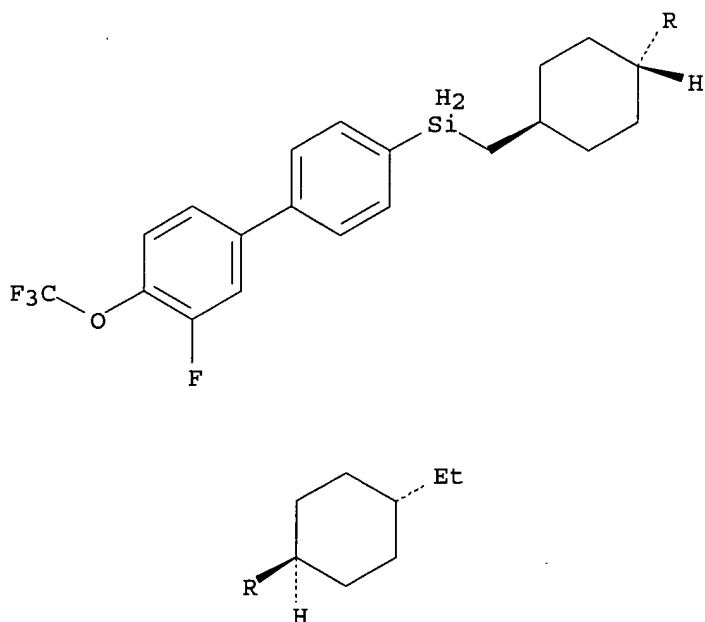
IT **377736-37-3**

RL: TEM (Technical or engineered material use); USES (Uses)
 (liq. crystal compns. and liq. crystal display device comprising liq.
 cryst. compds. having silane diyl group)

RN 377736-37-3 CAPLUS

CN Silane, [[[trans,trans)-4'-ethyl[1,1'-bicyclohexyl]-4-yl]methyl][3'-fluoro-4'-(trifluoromethoxy)[1,1'-biphenyl]-4-yl]- (9CI) (CA INDEX NAME)

Relative stereochemistry.



L4 ANSWER 4 OF 7 CAPLUS COPYRIGHT 2002 ACS

AN 1998:513338 CAPLUS

DN 129:216222

TI Structural effects of the oxazaborolidine derived from L-threonine in the reduction of (trifluoroacetyl)biphenyl derivatives with catecholborane

AU Fujisawa, Tamotsu; Onogawa, Yoshio; Shimizu, Makoto

CS Department of Chemistry for Materials, Mie University, Tsu, Mie, 514-8507, Japan

SO Tetrahedron Letters (1998), 39(33), 6019-6022

CODEN: TELEAY; ISSN: 0040-4039

PB Elsevier Science Ltd.

DT Journal

LA English

CC 21-2 (General Organic Chemistry)

OS CASREACT 129:216222

AB The redn. of (trifluoroacetyl)biphenyl derivs. with catecholborane as a stoichiometric reductant in the presence of the oxazaborolidine catalyst derived from L-threonine in dichloromethane-toluene at -90.degree. C proceeds to give the corresponding alcs. in high yields with high enantioselectivity. The distinctive feature of this oxazaborolidine exists in the five-membered ring covered with the t-butyldimethylsiloxo

group.

ST redn acetyl biphenyl oxazaborolidine catalyst

IT Ketones, reactions
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (redn. of (trifluoroacetyl)biphenyl derivs. with catecholborane in the presence of oxazaborolidine catalysts)

IT Alcohols, preparation
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (redn. of (trifluoroacetyl)biphenyl derivs. with catecholborane in the presence of oxazaborolidine catalysts)

IT Reduction
 Reduction catalysts
 (stereoselective; redn. of (trifluoroacetyl)biphenyl derivs. with catecholborane in the presence of oxazaborolidine catalysts)

IT 112022-81-8 129145-37-5 140834-48-6 140834-49-7 212569-65-8
 212569-66-9 212569-67-0
 RL: CAT (Catalyst use); USES (Uses)
 (redn. of (trifluoroacetyl)biphenyl derivs. with catecholborane in the presence of oxazaborolidine catalysts)

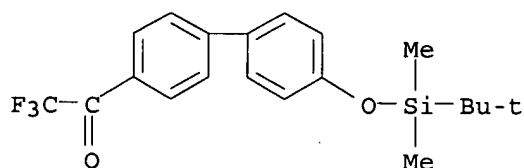
IT 98-86-2, Acetophenone, reactions 274-07-7, Catecholborane 134249-43-7
 177727-09-2 206758-26-1 212569-69-2 **212569-70-5**
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (redn. of (trifluoroacetyl)biphenyl derivs. with catecholborane in the presence of oxazaborolidine catalysts)

IT 1517-69-7P, (R)-1-Phenylethanol 177727-03-6P 177727-04-7P
 206758-30-7P 212569-72-7P **212569-73-8P**
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (redn. of (trifluoroacetyl)biphenyl derivs. with catecholborane in the presence of oxazaborolidine catalysts)

IT **212569-70-5**
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (redn. of (trifluoroacetyl)biphenyl derivs. with catecholborane in the presence of oxazaborolidine catalysts)

RN 212569-70-5 CAPLUS

CN Ethanone, 1-[4'-[[[(1,1-dimethylethyl)dimethylsilyl]oxy][1,1'-biphenyl]-4-yl]-2,2,2-trifluoro- (9CI) (CA INDEX NAME)



IT **212569-73-8P**
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (redn. of (trifluoroacetyl)biphenyl derivs. with catecholborane in the presence of oxazaborolidine catalysts)

RN 212569-73-8 CAPLUS

CN [1,1'-Biphenyl]-4-methanol, 4'-[[[(1,1-dimethylethyl)dimethylsilyl]oxy]-.alpha.-(trifluoromethyl)-, (.alpha.R)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.

